M016: ROPED CLIMBING ON ICE

TSP Number/Title	M016: Roped Climbing on Ice
TSP User	The following courses use this TSP: Summer Instructor Qualification Course Basic Military Mountaineering Course Assault Climbers' Course
Supersedes TSP(s)/Lessons	None
TSP User	The following courses use this TSP: Mountain Instructor Qualification Course (MIQC) Basic Mountaineering Course (BMC) Assault Climber Course (ACC)
Proponent	United States Army Alaska, Northern Warfare Training Center
Improvement Comments	Send comments and recommendations on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to: ATTN: TRAINING ADMINISTRATOR COMMANDANT USARAK NWTC 1060 GAFFNEY ROAD #9900 FORT WAINWRIGHT AK 99703-9900
Security Clearance/Access	Public domain
Foreign Disclosure Restrictions	The Lesson Developer in coordination with the USARAK NWTC foreign disclosure authority has reviewed this lesson. This lesson is releasable to foreign military students from all requesting foreign countries with Approval of Commandant USARAK NWTC.

PREFACE

Purpose

This training support package provides the instructor with a standardized lesson plan for presenting instruction for:

Task Number	Task Title
VIII.1100	Roped climbing on snow / ice

Technique of Delivery

Lesson Number	Instructional Strategy	Media
M016	Class and Practical Exercise	None

This TSP contains

SECTION I **ADMINISTRATIVE DATA**

All courses including this lesson

Course Number	Course Title
NA	Basic Mountaineering Course
NA	Mountain Instructor Qualification Course
NA	Assault Climber Course

Task(s) Taught or Supported

Task Number	Task Title
VIII.1100.A	Prepare for climbing snow / ice
VIII.1100.B	Establish a belay for climbing on moderate snow and ice
VIII.1100.C	Perform climbing on moderate to vertical snow and ice

Task(s) Reinforced

Task Number	Task Title
VI.0200	Risk Management for Mountain Operations
VIII.0300	Rope Management and Knots
VIII.0400	Anchors
VIII.0500	Climbing
VIII.0600	Belay Techniques
VIII.0700	Roped Climbing
VIII.1000	Individual Movement on Snow and Ice

Test Lesson Number

Hours	Lesson Number	Lesson Title
	M020/M021/M022	BMC Mountaineering Review/ACC Mountaineering Review/MIQC Mountaineering Review

Prerequisite Lesson(s)

-M005, Risk Management for Mountain Operations
-M007, Mountaineering Equipment
-M008, Rope Management and Knots
-M009, Anchors
-M010, Climbing
-M011, Belay Techniques
-M012, Roped Climbing
-M015, Individual Movement on Snow and Ice

References

Number	Title	Date	Additional Information
	NWTC Mountain Operations Manual	FY04	Updated yearly
FM 3-97.6	Mountain Operations	November 2000	http://www.adtdl.army.mil/
FM 3-97.61	Military Mountaineering	August 2002	http://www.adtdl.army.mil/

Student Study Assignment Read TSP M016

Instructor Requirements MIQC graduate, TAITC graduate

Additional Support Personnel Requirements None

Equipment Required

Instructor Equipment:

- Crampons
- 1 pr ice tools
- 1 set ice protection
- Helmet

Student Equipment:

- Crampons
- 1 pr ice tools
- 1 set ice protection
- Helmet
- Pen and notepad

Materials Required

Instructor Materials:

- NWTC Mountain Operations Manual
- Risk Management for Mountain Operations

Student Materials:

- NWTC Mountain Operations Manual
- Risk Management Guide for Mountain Operations

Classroom, Training Area and Range Requirements

Steep snow covered slope with snow or ice sufficient for placing protection.

Ammunition Requirements

None

Instructional Guidance

Before presenting this lesson, instructors must thoroughly prepare by studying this lesson and identified reference material.

Branch Safety Manager Approval

NAME	Rank	Position	Date
Mark Gilbertson	**GS-09**	**Training Specialist**	

Proponent Lesson Plan Approvals

NAME	Rank	Position	Date
Peter Smith	**GS-12**	**Training Administrator**	

SECTION II **INTRODUCTION**

Method of instruction: Demonstration and Practical Exercise
Type of instruction: Small Group
Instructor to student ratio: 1:3
Time of instruction: 1 Hour
Media used: None

Motivator

When climbing snow or ice and the angle increases to the point of possible severe falls, a rope should be used just as in rock climbing. What are the differences between roped climbing on snow/ice and rock? Minimal.

You have learned anchors, rope management and knots, mountaineering equipment, individual movement on snow and ice. Put all these skills together and lead climbing on snow or ice is next.

Terminal Learning Objective

ACTION	Prepare for and climb steep snow and ice
CONDITIONS	Given adequate protection, mountaineering hardwear, dynamic climbing rope, and slings and a slope covered with snow/ice
STANDARDS	Prepare for and climb steep snow and ice IAW the NWTC Mountain Operations Manual.

Safety Requirements

Ensure that students:

- Receive a risk assessment prior to movement to the training area and before practical exercises.
- Have all necessary equipment for the PE's, to include any additional equipment required by the NWTC SOP.
- Have two full canteens and drink adequate water to avoid becoming dehydrated.
- Receive a briefing on the symptoms of heat injury or cold weather injury, as appropriate.

Risk Assessment Level

Determined by instructor

Environmental Considerations

None

Evaluation

You will be evaluated on this task during the Alpine FTX portion of training as per the NWTC training schedule for this course.

Instructional Lead-in

Let's look at the requirements for roped climbing on snow and ice and explore the differences between rock and snow/ice climbing.

SECTION III **PRESENTATION**

ELO A

ACTION	Prepare for climbing snow / ice
CONDITION	Given adequate protection, mountaineering hardwear, dynamic climbing rope, and slings and a slope covered with snow/ice
STANDARD	Prepare for climbing snow / ice IAW the NWTC Mountain Operations Manual.

Learning Step /Activity 1- Preparation for and climbing snow / ice

a. When the angle increases to the possibility of a severe fall, the possibility of the belayer being struck by falling ice or hard snow increases also. Ensure the belay is established out of the path of potentially falling objects from the climb.

b. The leader will have adequate and sufficient protection and sling material to prevent a severe fall and enough anchors to secure the belay at the end of the climb.

c. The climb and all commands will be the same as for rock climbing except the climbers use the command *"ICE"* when debris is falling.

d. Keep in mind that a route on ice will deteriorate as traffic continues.

ELO B

ACTION	Establish a belay for climbing on moderate snow and ice
CONDITION	Given adequate protection, mountaineering hardwear, dynamic climbing rope, and slings and a slope covered with snow/ice
STANDARD	Establish a belay for climbing on moderate snow and ice IAW the NWTC Mountain Operations Manual

Learning Step /Activity 1- Establish a belay for climbing on moderate snow and ice

a. The belay will be established in the same manner as previously taught in M011, Belay Techniques except as follows:

1. The belay position should be offset to one side of the climbing route as ice and snow will cascade down as the climber moves higher.

ELO C

ACTION	Perform climbing on moderate to vertical snow and ice
CONDITION	Given adequate protection, mountaineering hardwear, dynamic climbing rope, and slings and a slope covered with snow/ice
STANDARD	Perform climbing on moderate to vertical snow and ice IAW the NWTC Mountain Operations Manual.

Learning Step /Activity 1- Perform climbing on moderate snow and ice

a. Ice climbing is generally thought of as a sport. There are specialized ice tools, ice screws, boots and crampons for steep to overhanging ice. Training in this medium is generally not required for most military mountaineers. However, training in this medium gives confidence to soldiers that will need to move over exposed, ice or snow covered terrain as part of mountain operations. This training will develop confidence in moving over exposed terrain quickly, efficiently and without the need for ropes or protection (which is often the case while performing actual military operations). The principles of climbing on rock apply to ice as well. Climb with the legs not with the arms. A basic ice climbing sequence is described below. It does not encompass all of the modern ice climbing techniques available today.

b. The leader will ensure that he has adequate protection for the entire route and an anchor at the top to belay the second.

c. The leader begins by placing both axes in the ice above his head utilizing the hammer technique. Sometimes there are gaps in the ice that can be "hooked" with the pick of the axe. The weight of the body

should not rest on the arms. Arms are held overhead approximately shoulder width apart.

d. Once adequate purchase is gained with the axes, the feet are moved up using the front point technique. Throughout the movements the body remains in a general X position. The weight of the body is centered over the feet with the heels lowered slightly. Move the feet up and lock off with bent arms. Remove one ice tool and place it higher overhead. Repeat with the other tool. Stand on the feet, placing the body back into the X position.

e. Protection is placed in intervals of about one body length above the last piece. If a large bulge or overhang is encountered a piece should be emplaced at the bottom and soon after the top is gained.

f. After the top of the climb is reached or a belay becomes necessary, it will be established in the same manner as for belays on rock except that ice screws or pickets may be used.

g. Once the belay is established the second will begin the climb utilizing the same techniques as the leader. All protection is removed and racked by the second and transferred to the leader at the belay station.

SECTION IV	SUMMARY

Check on Learning

Why is the belay offset?
To avoid being hit by falling snow or ice released by the leader.

What is the basic body position?
The body should be in a general X with the feet and arms approximately shoulder width apart.

Review and Summarize Lesson

ACTION	Prepare for and climb steep snow and ice
CONDITIONS	Given adequate protection, mountaineering hard wear, dynamic climbing rope, and slings and a slope covered with snow/ice
STANDARDS	Prepare for and climb steep snow and ice IAW the NWTC Mountain Operations Manual.

Transition to next lesson

As per the NWTC training schedule; dependent upon the course in conduct

SECTION V	STUDENT EVALUATION
Testing Requirements	**Students will be tested on this task during the Alpine FTX portion of training as per the NWTC training schedule for this course.**
Feedback Requirement	**Students will receive two opportunities to pass each event tested. Re-training will be conducted for students that fail the first iteration of testing. Refer to M020 for specifics.**